

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Miri Seiberg, et al.

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**METHODS FOR REGULATING  
PHAGOCYTOSIS AND ICAM-1  
EXPRESSION**

**DECLARATION OF MIRI SEIBERG, PH.D.**

I, Miri Seiberg, am a Principal Research Fellow in the Skin Biology Technical Resource Center at Johnson & Johnson Consumer Companies, Inc. My education includes a Ph.D. in Molecular Biology from The Weizmann Institute of Science, Rehovot, Israel, in collaboration with Princeton University, Princeton, NJ and a B. S. in Life Sciences from Tel-Aviv University, Tel-Aviv, Israel. My curriculum vitae is attached hereto as Exhibit 1.

1. Soybeans are of high nutritional value, however they have been known to possess certain undesirable qualities which limit their use in animal and human nutrition. (e.g. Bau HM , Alais C Denaturation and enzymatic proteolysis in vitro of protein fractions of soya flour Ann Nutr Aliment. 1975;29(4):351-70). Numerous studies have evaluated the effects of technological treatments on the properties of certain soybean protein fractions, in order to identify a fraction with nutritional value but no gastro-intestinal side effects. (Bau HM , Alais C Denaturation and enzymatic proteolysis in vitro of protein fractions of soya flour Ann Nutr Aliment. 1975;29(4):351-70)

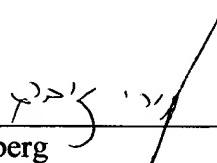
2. Soy products containing soy trypsin inhibitor activity are and were well-known to be dangerous for human ingestion. Soy products containing such activity can cause gastric distress and even death due to non-absorption of nutrients. In fact, the World Health Organization has issued warnings about ingesting uncooked legume

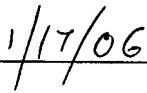
products for this very reason. Thus, any publications that indicate that a soy or legume product is ingestible imply that such a product would not have contained active trypsin inhibitors.

3. Proteins are said to be "denatured" when their physical and physiological properties are changed such that they lose their activity. Such change is generally due to a change in a protein's chemical structure and/or conformation. Protein denaturation and the consequent loss of biological activity are described in biochemistry textbooks (e.g. Biochemistry, A. L. Lehninger, 1975, p.62-63).

4. The soy products of the compositions of my invention must contain active trypsin inhibitors in order to be effective in decreasing phagocytosis or ICAM-1 induction. I understand this to mean that they are non-denatured, and cannot be used for nutritional consumption.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

  
Dr. Miri Seiberg

  
Date  
1/17/06

## **Exhibit 1**

### **Miri Seiberg**

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### **Education**

- 1977 B.Sc. Biological Sciences, Tel-Aviv University, Israel.  
1982 M.Sc. Biochemistry, The Weizmann Institute of Science, Israel.  
1989 Ph.D. Molecular Biology, The Weizmann Institute of Science, Israel, in collaboration with Princeton University, Princeton NJ.

### **Employment**

- 1982 **The Weizmann Institute of Science, Israel.**  
Research assistant, Dept. of Chemical Immunology.
- 1982-90 **Princeton University, Princeton NJ**  
1982-84 Visitor, Dept. of Biochemical Sciences.  
1987-89 Visitor, Dept. of Molecular Biology.  
1989-90 Post Doctoral Fellow, Dept. of Biology.
- 1990- 92 **Bristol-Myers Squibb PRI, Princeton NJ.**  
Post Doctoral Fellow, Dept. of Macromolecular Structure.
- 1992- **Johnson & Johnson Family of Companies**  
1992-95 Senior Scientist, Skin Biology Research Center of Pharmaceutical Research Institute, Raritan NJ.  
1995-96 Staff Scientist, Dermatology R&D, Johnson & Johnson Consumer Companies, CPWW division, Skillman NJ.  
1997-99 Principal Scientist, Skin Research Center, CPWW, Skillman NJ  
1999-0 Research fellow, Skin Research Center, CPWW, Skillman NJ  
2001 -05 Sr. Research fellow, Skin Biology TRC and LAS, CPWW, Skillman NJ  
5/2005- Principal Research fellow, Skin Biology TRC and LAS, CPWW, Skillman NJ

## **Industrial Experience**

### **1990- 92, Bristol-Myers Squibb PRI, Princeton NJ.**

Post Doctoral Fellow, Dept. of Macromolecular Structure.

Using a rat model system for salt-induced hypertension, identified a novel gene involved in salt-induced hypertension, and demonstrated selective expression patterns.

### **1992-today, Johnson & Johnson Pharmaceutical Research Division**

1992-95, Senior Scientist

This position involves conducting individual projects, supervising one BS/MS technician. Identified pathways involved in epidermal differentiation, hair growth and keratinocyte apoptosis. Developed relevant bioassays and screens.

### **Johnson & Johnson Consumer Companies, Inc.**

1995-96, Staff Scientist

Directed two research scientists. Developed enzymatic, molecular and cellular assays and screens for potential drug and cosmetic activity. Involved in retinoid studies, proteases and protease inhibitors, in epidermal differentiation and hair growth.

1997-99, Principal Scientist

Head of pigmentation group. Directed research scientists and postdoctoral fellows. Horizontally directed the pigmentation technology development team. Initiated and directed molecular, cellular, and biochemical studies of pigmentation, resulting in the identification of a novel pathway that regulates skin color. Identified agents, both drugs and cosmetics, to modulate this pathway, resulting in darkening or lightening of human skin. Designed and evaluating product prototypes for biological activity and efficacy. In charge of numerous academic collaborations.

1999-00, Research Fellow

Continue heading the pigmentation team and supporting technology and product design groups in creating a line of depigmenting agents. First products available in stores. Additional responsibility in heading the hair growth efforts, introducing a new concept for delaying hair growth. Identified novel cosmetic agents with modulatory effect, demonstrated preclinical POP and initiated product development efforts. Expand responsibility for academic collaborations.

2001 - 2005, Sr. Research Fellow

Director of the Skin Biology research group, including pigmentation, hair, acne, skin aging and skin cancer teams and supporting facilities. Continue basic research and product development support in all areas. Identified a novel cosmetic for skin aging, currently under early development stages. Directed efforts in the development of a new drug for acne, based on a proprietary target, now under clinical evaluation. Continue R&D support for skin lightening technology, now sold by numerous Brands and J&J companies worldwide. Continue R&D support for delaying hair growth technology, now sold by numerous J&J companies and Brands worldwide. Received the Johnson Medal, the highest level of scientific recognition by JJ. Head of Laboratory Animal Services, incl. vivarium support for numerous J&J companies. Council member of the J&J Corporate office of Science and Technology. In charge of academic interactions and collaborations for Skin Biology and related areas. In charge of the J&J SRC training grant. Member of the mentoring team.

5/2005, Principal Research Fellow

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### **Patent applications**

More than 25 patent applications in the areas of skin and hair

### **J&J Awards**

1. Skin care council – best scientific content poster award. June 1993.
2. American Express achievement award of PRI. January 1995.
3. COSAT-CORD internship award. April 1997.
4. Skin care council – best overall poster award. June 1999.
5. COSAT excellence in science award. November 1999.
6. CPWW achievement award. January 2000.
7. Skin care council – best overall poster award. June 2001.
8. CPPW Grandview award. March 2003.
9. The Johnson Medal. Oct 2003.
10. The Mountainview award. March 2005.

### **Societies**

1. Pan American Society of Pigment Cell Research (council member, 2001-03, member of finance committee, 2000-02, nominated for 2005 presidency elections).
2. Society of Investigative Dermatology
3. American Society of Cellular Biology
4. American Association for the Advancement of science
5. New York Academy of Science (elected 2003).

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## Publications

D. Duksin, **M. Seiberg** and W.C.Mahoney. (1982) Eur. J. Biochem 129: 77-80. Inhibition of protein glycosylation and selective cytotoxicity towards virally transformed fibroblasts caused by B3-Tunicamycin.

**M. Seiberg** and D. Duksin. (1983) Can. Res. 43: 845-850. Selective cytotoxicity of purified homologues of Tunicamycin on transformed Balb/3T3 fibroblasts.

S.F. Yu, T. Von Ruden, P.W. Kantoff, C. Garber, **M. Seiberg**, U. Ruther, W.F. Anderson, E.F. Wagner and E. Gilboa. (1986) Proc. Natl. Acad. Sci. USA. 83: 3194-3198. Self inactivating retroviral vector designed for transfer of whole genes into mammalian cells.

P.W. Kantoff, D.B. Kohn, H. Mitsuya, D. Armertano, **M. Seiberg**, J. A. Zweibel, M.A. Eglitis, J.R. McLachlin, D.A. Wiginton, J.J. Hutton, S.D. Horowitz, E. Gilboa, R.M. Blaese and W.F. Anderson. (1986) Proc. Natl. Acad. Sci. USA. 83: 6563-6567. Correction of adenosine deaminase deficiency in cultured human T and B cells by retrovirus-mediated gene transfer.

**M. Seiberg**, M. Kessler, A.J. Levine and Y. Aloni. (1987) Virus Genes 1:1 97-116. Human RNA polymerase II can prematurely terminate transcription of Adenovirus type 2 late transcription unit at a precise site that resembles a prokaryotic termination signal.

**M. Seiberg**, Y. Aloni and A.J. Levine. (1989) J. Virol 63:1134-1141. The Adenovirus type 2 DNA binding protein interacts with the major late promoter Attenuator RNA.

**M. Seiberg**, Y. Aloni and A.J. Levine. (1989) J. Virol 63: 4093-4096. A comparison of human and monkey cells for their ability to attenuate transcripts that begin at the adenovirus major late promoter.

H. Cho, **M. Seiberg**, I. Georgieff, A.K. Teresky and A.J. Levine. (1989) Journal of Neuroscience Research 24: 115-122. The impact of the Genetic background of transgenic mice upon the formation and timing of choroid plexus papillomas.

M. Moore, A.K. Teresky, A.J. Levine and **M. Seiberg**. (1992) J. Virol 66(2): 641-649. P53 Mutations Are Not Selected for in Simian Virus 40 T-antigen-Induced Tumors from Transgenic Mice.

K.S. Stenn, L. Lawrence, D. Veis, S. Korsmeyer and **M. Seiberg**. (1994) Journal of Investigative Dermatology, 103: 107-111. Expression of the Bcl-2 Protooncogene in the Cycling Adult Mouse Hair Follicle.

**M. Seiberg**, J. Marthinuss and K. S. Stenn. (1995) Journal of Investigative Dermatology, 104(1): 78-82. Changes in Expression of Apoptosis - Associated Genes Mark Early Catagen.

J. Marthinuss, L. Lawrence and **M. Seiberg**. (1995) Cell Growth and Differentiation, 6: 239-250. Apoptosis in Pam212 Epidermal Keratinocytes: the Role of bcl-2 in Epidermal Differentiation.

**M. Seiberg** and J. Marthinuss. (1995) Developmental Dynamics, 202: 294-301. Clusterin Expression Within Skin correlates with hair growth.

J. Marthinuss, P. Andrade-Gordon and **M. Seiberg**. (1995) Cell Growth and Differentiation, 6: 807-816. A secreted serine protease can induce apoptosis in Pam212 keratinocytes.

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R.J. Santulli, C.K. Derian, A. Darrow, K.A. Tomko, A. Eckhardt, **M. Seiberg**, B. Scarborough and P. Andrade-Gordon. (1995) Proc. Natl. Acad. Sci., 92: 9151-9155. Evidence for the presence of a protease activated receptor distinct from the thrombin receptor in human keratinocytes.

**M. Seiberg**, S. Wisniewski, G. Cauwenbergh and S. S. Shapiro. (1997) Dev. Dynamics, 208: 553-564. Trypsin-induced follicular papilla apoptosis results in delayed hair growth and pigmentation.

**M. Seiberg**, P. Siock, S. Wisniewski, G. Cauwenbergh and S. S. Shapiro (1997) J. Invest. Dermatol., 109: 370-376. The effect of trypsin on apoptosis, utriculi size and elasticity in the rhino mouse.

L. P. Bernhofer, **M. Seiberg** and K. M. Martin (1999). Toxicology In Vitro, 13: 219-229. The influence of the response of skin equivalents systems to topically applied consumer products by epithelial-mesenchimal interactions.

**M. Seiberg**, C. Paine, E. Sharlow, M. Costanzo, P. Andrade-Gordon, M. Eisinger and S. S. Shapiro (2000). Exp. Cell. Res. 254(1): 25-32. The Protease-Activated Receptor-2 regulates pigmentation via keratinocyte-melanocyte interactions.

**M. Seiberg**, C. Paine, E. Sharlow, M. Costanzo, P. Andrade-Gordon, M. Eisinger and S. S. Shapiro (2000). J. Invest. Dermatol. 115(2): 162-7. Inhibition of melanosome transfer results in skin lightening.

E. Sharlow, C. Paine, M. Eisinger S. Shapiro and **M. Seiberg** (2000). J. Cell Sci. 113(pt 17): 3093-3101. The Protease-Activated Receptor-2 upregulates keratinocyte phagocytosis.

C. Paine, E. Sharlow, F. Liebel, M. Eisinger, S. Shapiro and **M. Seiberg** (2001). J. Invest. Dermatol. 116(4): 587-595. An alternative approach to depigmentation by Soybean extracts via inhibition of the PAR-2 pathway.

**M. Seiberg**, J-C Liu, L.. Babiarz, E. Sharlow and S. Shapiro (2001). Soymilk reduces hair growth and hair follicle dimensions. Exp. Dermatol. 10: 405-13.

G. Scott, AC Deng, C. Rodriguez-Burford, **M Seiberg**, RJ Han, L. Babiarz, W. Grizzle, W. Bell, A. Pentland, (2001). Protease-activated receptor-2, a receptor involved in melanosome transfer, is upregulated in human skin by UV irradiation. . J. Invest. Dermatol. 117(6): 1412-20.

B.Z. Lin, L. Babiarz, F. Liebel, E. Roydon Price, D. Fisher, G. Gendimenico, and **M. Seiberg** (2002). Modulation of Microphthalmia-associated Transcription Factor Gene Expression Alters Skin Pigmentation. J. Invest. Dermatol. 119(6): 1330-1340.

G. Scott, S. Leopardi, L. Parker, L. Babiarz, **M. Seiberg**, R. Han (2003). The PAR-2 receptor mediates phagocytosis in a Rho-dependent manner in human keratinocytes. J. Invest. Dermatol. 121:529-541.

L. Babiarz-Magee, N. Chen, **M. Seiberg** and B.Z. Lin (2004). The Expression and Activation of PAR-2 Correlate with Skin Color. Pigment Cell Res. 17: 241-251.

G. Scott, S. Leopardi, S. Printup, N. Malhi, **M. Seiberg** and R. LaPoint (2004). Proteinase activated receptor-2 stimulates prostaglandin production in keratinocytes: analysis of prostaglandin receptors on human melanocytes and effects of PGE2 and PGF2 $\alpha$  on melanocyte dendricity. JID, 122: 5, 1214-24.

M. T. Huang, J. G. Xie, C. B. Lin, M. Kizoulis, **M. Seiberg**, S. Shapiro, and A. H. Conney (2004)  
Inhibitory Effect of Topical Applications of Non-denatured Soymilk on the Formation and Growth  
of UVB-induced Skin Tumors. Oncology Res. 14(7-8):387-397.

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**Chapters, Invited Reviews**

O. Resnekov, E. Ben-Asher, E. Bengal, M. Choder, N. Hay, M. Kessler, N. Ragimov, **M. Seiberg**, H. Skolnik-David and Y. Aloni. (1988) Gene 72: 91-104. Transcription termination in animal viruses and cells.

R. Quartin, M. Moore, **M. Seiberg**, C. Finlay, S. Chu, J. Martinez, D. Dittmer, J. Momand and A.J. Levine. Pezcoller Symposium, Trenton, Italy, (June 1991). The p53 Gene and Protein and Its Interactions with Viral Oncogene Products.

S. Prouty, **M. Seiberg** and K.S. Stenn. (1994) Journal of Dermatological Science 7 (suppl): 109-124. Molecules of Hair Follicle Cycling – A Tabulated Review.

**M. Seiberg**. (1997) Serine Proteases, apoptosis and PCD in skin and hair. In: Apoptosis: Practical applications and novel therapies, Chapter 3.3.1, IBC Press, USA.

**M. Seiberg** and S. Shapiro (1998) The regulation of pigmentation by serine proteases and their inhibitors. In: Inhibition of human proteases: from target identification to therapy, CHI Press, USA.

**M. Seiberg** . (2001) Pigment Cell Res 2000; 14: 236-242. Melanocyte and Keratinocyte Interactions in Melanosome Transfer.

C. Guttman, J.C. Liu, **M. Seiberg** (2001) Dermatology Times 22: 24.

**M. Seiberg**, (2002). in: JP Ortonne, R. Balotti (eds), Mechanisms of Tanning. Martin Dunitz. PAR-2 regulates pigmentation via melanosome phagocytosis. p. 215-228.

C. Paine, L. Babiarz, E. Sharlow, F. Liebel, M. Eisinger, S. Shapiro and **M. Seiberg**, (2001) An alternative approach to depigmentation by Soybean extracts *via* inhibition of the PAR-2 pathway. Proceedings of the 10th European Academy of Dermatology and Venerology.

**M. Seiberg**, L. Babiarz, J.C. Liu, and S.S. Shapiro. Soymilk Reduces Hair Growth and Follicle Dimensions. Proceedings of the 9<sup>th</sup> European Hair Research Society meeting (Invited, in press).

**M. Seiberg**, J.C. Liu, L. Babiarz, S.S. Shapiro, S. Ball, I-T Wu, Y. Appa. (2003). Soy extracts reduce hair growth and hair follicle dimensions. in: D. Van Neste (ed), Hair Science and Technology.

**M. Seiberg**. Skin pigmentation, lightening and darkening. Chapter 4. In R. Lad (ed), Biotechnology in Skin Care (04, in press).

J-C Liu, J Wu and **M Seiberg**. Applications of total soy in skin care. Chapter 12, p.115-127. In: Baran and Maibach (eds), Textbook of Cosmetic Dermatology (2004, in press).

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### Abstracts, conference presentations

**M. Seiberg**, A.J. Levine and Y. Aloni. CSH DNA Tumor virus meeting. (1985), p. 82. Attenuation in Ad2 as a mechanism of transcription-termination by RNA polymerase II.

Y. Aloni, O. Resnekov, **M. Seiberg**, M. Kessler and A.J. Levine. CSH RNA processing meeting (1986), p. 23. Eucaryotic RNA polymerase II can prematurely terminate transcription at precise sites that resemble a procaryotic termination signal.

**M. Seiberg** and Y. Aloni. CSH DNA Tumor virus meeting (1986), p. 128. Attenuation in Ad2 may determine its host-range.

Y. Aloni, M. Kessler, O. Resnekov, **M. Seiberg**, N. Ragimov, E. Bengal and O. Amster-Choder. CSH RNA processing meeting (1987), p. 21. Attenuation in the regulation of gene expression in virus and animal cells.

**M. Seiberg**, A.J. Levine and Y. Aloni. CSH DNA tumor virus meeting (1988), p.198. The 72kDa Ad2 DNA binding protein (DBP) specifically binds to the Ad2 Attenuated RNA.

M. Moore, A. Teresky, A.J. Levine and **M. Seiberg**. The Fifth Annual p53 Workshop, Princeton University (1991). The Characterization of p53 Expression in T-Antigen Induced Liver Tumors in Transgenic Mice: p53 Mutation is not Selected for During Tumor Development.

K.S. Stenn, L. Lawrence, D. Veis, S.J. Korsmeyer and **M. Seiberg**. 54th annual meeting of the Society for Investigative Dermatology, (1993). J. Invest. Dermatol. 100 (4) p. 512. Proto-oncogene bcl-2 RNA Expression in the Cycling Hair Follicle Correlates with Anagen.

J. Marthinuss, K.S. Stenn and **M. Seiberg**. 31st Annual meeting of the American Society of Dermatopathology, J. of Cutaneous Pathology 20(6), p. 557 (1993). P53 Appears Inessential to Hair Growth and Cycling in the Adult Mouse.

**M. Seiberg**, L. Lawrence, J. Marthinuss, D. Veis, S. Korsmeyer and K.S. Stenn. 1st International Conference on Applications of Apoptosis, Programmed Cell Death, Jan. 17-19, 1994, #40. Bcl-2 Expression in the Epidermis and the Cycling Hair Follicle (Invited speaker).

**M. Seiberg**, J. Marthinuss and K.S. Stenn. 55th Annual meeting for the Society of Investigative Dermatology, (1994). J. Invest. Dermatol. 102(4) p. 532. Pathways of Gene Expression Along the Hair Cycle (Invited speaker).

S.M. Prouty, **M. Seiberg**, J. Marthinuss, L. Lawrence and K.S. Stenn. 55th Annual meeting for the Society of Investigative Dermatology (1994). J. Invest. Dermatol. 102(4) p. 624. c-fos Expression Pattern Following Anagen Induction in the Plucked-Skin Mouse Model.

J. Marthinuss, K.S. Stenn and **M. Seiberg**. Molecular & Cell Biology of Apoptosis in Development, Disease Cancer (Sep. 1994), Apoptosis in Pam212 Epidermal Keratinocytes: the Role of bcl-2 in Epidermal Differentiation (Invited speaker).

**M. Seiberg** and J. Marthinuss. 56th Annual meeting for the Society of Investigative Dermatology, (1995). J. Invest. Dermatol. 104(4) p.638. Clusterin Expression Within Skin correlates with hair growth.

J. Marthinuss, P. Andrade-Gordon and **M. Seiberg**. (May 1995) A secreted serine protease can induce apoptosis in Pam212 keratinocytes. 2nd annual Conference on commercial prospects of Apoptosis.

**M. Seiberg**, S. Shapiro, S. Wisniewsky and G. Cauwenbergh (Nov 1996) Serine proteases, PCD and apoptosis in skin and hair. 3<sup>rd</sup> annual international conference on Apoptosis (Invited speaker).

**M. Seiberg**, S. Wisniewski, G. Cauwenbergh and S. S. Shapiro. (Apr 1997) Serine proteases, PCD and apoptosis in skin and hair. In: The biology of proteolysis, p. 127, CSHL Press.

**M. Seiberg** and S. Shapiro (Apr 1998). The regulation of pigmentation by proteases and their inhibitors. In: Inhibition of human proteases: from target identification to therapy (Invited speaker).

**M. Seiberg** and S. Shapiro (1998). Pigment Cell Research 11(3) p. 175. The regulation of pigmentation by serine proteases and their inhibitors. The 1998 PASPCR meeting (Invited speaker).

**M. Seiberg** and S. Shapiro. (Nov 1998). The effect of serine proteases and their inhibitors on pigmentation. 2<sup>nd</sup> international meeting of hair research societies (Invited speaker).

**M. Seiberg** (Feb 1999). The regulation of pigmentation by serine proteases and their inhibitors. 3<sup>rd</sup> international conference on cosmeceuticals (Invited speaker).

**M. Seiberg**, C. Paine, E. Sharlow, P. Andrade-Gordon, M. Costanzo, M. Eisinger and S. Shapiro (1999). Pigment Cell Research Supp 7, p. 41. The Protease-Activated Receptor-2 regulates pigmentation via keratinocyte-melanocyte interactions. IPCC international meeting of pigmentation (Invited speaker).

E. Sharlow, C. S. Paine, L. Babiarz, M. Eisinger, S. Shapiro and **M. Seiberg** (2000). J. Invest. Dermatol. 114 (4) p. 814. The Protease-Activated Receptor-2 upregulates keratinocyte phagocytosis.

B. Lin, C. Paine, F. Liebel, J. Mezick, G. Gendimenico and **M. Seiberg** (2000). J. Invest. Dermatol. 114 (4) p. 817. Using MITF to identify modulators of pigmentation.

**M. Seiberg**, E. Sharlow, C. Paine, L. Babiarz, M. Eisinger and S. Shapiro (2000). Pigment Cell Research 13 (5) p. 198. The Protease-Activated Receptor-2 affects pigmentation by upregulating keratinocyte phagocytosis (Invited speaker).

A. Deng, **M. Seiberg**, A. Pentland, R. Han and G. Scott (Oct 2000). The American Society of Dermatopathology 38<sup>th</sup> annual meeting. Protease-Activated Receptor-2 (PAR-2), a receptor involved in melanosome transport, is upregulated in skin in vivo by Ultraviolet irradiation.

E. R. Sharlow, C. S. Paine, L. Babiarz, M. Eisinger, S. Shapiro and **M. Seiberg** (Dec 2000). 40<sup>th</sup> Annual meeting of the American Society for Cell Biology. Molecular Biology of the Cell 11(suppl), p.228a. The protease-activated receptor regulates Keratinocyte Phagocytosis.

**M. Seiberg**, C. Paine, E. Sharlow, M. Eisinger and S. S. Shapiro (March 2001). 59<sup>th</sup> annual meeting of the American Academy of Dermatology. The PAR-2 pathway can regulate pigmentation.

C. Paine, E. Sharlow, F. Liebel, M. Eisinger, S. Shapiro and **M. Seiberg** (March 2001). 59<sup>th</sup> annual meeting of the American Academy of Dermatology. An alternative approach to depigmentation by Soybean extracts via inhibition of the PAR-2 pathway

**M. Seiberg**, C. Paine, J-C Liu and S. Shapiro (March 2001). 59<sup>th</sup> annual meeting of the American Academy of Dermatology. Soymilk and soybean-derived proteins delay hair growth and reduce hair size and hair pigmentation

C. Paine, R. Gallagher, and **M. Seiberg** (March 2001). 59<sup>th</sup> annual meeting of the American Academy of Dermatology. Computerized image analysis for hair growth studies.

C. Paine, G. Payonk, and **M. Seiberg** (March 2001). 59<sup>th</sup> annual meeting of the American Academy of Dermatology. Computerized image analysis for pigmentation studies.

**M. Seiberg**, C. Paine, J-C Liu and S. Shapiro (March 2001). 59<sup>th</sup> annual meeting of the American Academy of Dermatology. Soymilk prevents UV-induced pigmentation and reduces sunburns.

J-C Liu, **M. Seiberg**, S. Shapiro and R. Grossman (March 2001). 59<sup>th</sup> annual meeting of the American Academy of Dermatology. Soy: Potential applications in skin care.

C Paine, L. Babiarz, E. Sharlow, F. Liebel, M. Eisinger, SS Shapiro and **M. Seiberg**, An Alternative Approach to Depigmentation by Soybean Extracts via Inhibition of the PAR-2 pathway. Society for Investigative Dermatology Annual Meeting (2001) abstract # 731 p.52.

**M. Seiberg**, L. Babiarz, J.C. Liu, and S.S. Shapiro. Soymilk Reduces Hair Growth and Follicle Dimensions. Society for Investigative Dermatology Annual Meeting (2001) abstract # 261 p.36.

C. Paine, E. Sharlow, L. Babiarz, F. Liebel, M. Eisinger, S. Shapiro and **M. Seiberg**. 10<sup>th</sup> congress of the European Academy of Dermatology and Venerology. An alternative approach to depigmentation by Soybean extracts *via* inhibition of the PAR-2 pathway (Oct 2001).

J.C. Liu, **M. Seiberg**, J. Miller and J. Wu. 10<sup>th</sup> congress of the European Academy of Dermatology and Venerology. Application of Soy in skin care (Oct 2001).

**M. Seiberg**, C. Paine, M. Eisinger and S. Shapiro. 10<sup>th</sup> congress of the European Academy of Dermatology and Venerology. The PAR-2 pathway can regulate pigmentation (Oct 2001).

J.C. Liu, **M. Seiberg**, J. Miller, J. Wu, S. Shapiro and R. Grossman. 4<sup>th</sup> International Symposium on the role of Soy in preventing and treating chronic disease. Applications of soy in skin care. (2001).

J.C. Liu, **M. Seiberg**, F. Liebel, T. Chen, Y. Appa, and T. Oddos. Pre-clinical and clinical evaluation of Total Soy preparations in improving skin physical tone parameters. 60th annual meeting of the American Academy of Dermatology. (Feb 2002).

C. B. Lin, L. Babiarz, F. Liebel, Roydon E. Price, D. E. Fisher, G. J. Gendimenico, and **M. Seiberg**. Modulation of microphthalmia-associated transcription factor expression alters skin pigmentation. Society for Investigative Dermatology Annual Meeting (Apr. 2002). J. Invest. Dermatol 119, p.339

L. Babiarz, C. B. Lin and **M. Seiberg**. Differential expression of PAR-2 and its activator trypsin in different skin types. Society for Investigative Dermatology Annual Meeting (Apr. 2002). J. Invest Dermatol. 119, p.340.

**M. Seiberg**, L. Babiarz, J.C. Liu, and S.S. Shapiro. Soymilk Reduces Hair Growth and Follicle Dimensions. European Hair Research Society 9<sup>th</sup> meeting (June 2002).

C. B. Lin, L. Babiarz, F. Liebel, Roydon E. Price, D. E. Fisher, G. J. Gendimenico, and **M. Seiberg**. Modulation of microphthalmia-associated transcription factor expression alters skin pigmentation. International Pigment Cell Conference (Sept. 2002).

L. Babiarz, C. B. Lin and **M. Seiberg**. Differential expression of PAR-2 and its activator trypsin in different skin types. International Pigment Cell Conference (Sept. 2002).

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**M. Seiberg**, PAR-2 affects pigmentation via melanosome transfer. 2<sup>nd</sup> SkinEthic conference (Oct 03, Amsterdam, Nederland), (invited speaker).

**M. Seiberg**, Soy story, a case study, R&D Summit (Oct 03, Nice, France), (invited speaker).

M Huang, J Xie, CB Lin, M Kizoulis, **M Seiberg**, S Shapiro, and AH Conney. Inhibitory effect of topical applications of non-denatured soymilk on the formation and growth of UVB-induced skin tumors. 65<sup>th</sup> SID Annual Meeting (April 28-May 1, 2004). Poster Number 091, p.46.

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Z Renbin, J-C Liu, C Bertin, JP Ortonne, **M Seiberg**, V Iotsova. Non-denatured soybean extracts enhance skin elasticity. 65<sup>th</sup> SID Annual Meeting (April 28-May 1, 2004). Poster Number 169, p. 49.

**M. Seiberg**. Melanosomes and PAR-2: From basic research to applications. PASPCR (June 2004) (invited speaker).

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V Iotsova, R Zhao, JC Liu, C Bertin, JP Ortonne, **M Seiberg**. Changes in elastin expression and organization in response to treatments with non-denatured soybean extracts. 2<sup>nd</sup> national meeting of the Amer. Soc for Matrix Biology (2004).

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